If you are using a printed copy of this procedure, and not the on-screen version, then you MUST make sure the dates at the bottom of the printed copy and the on-screen version match.
The on-screen version of the Collider-Accelerator Department Procedure is the Official Version.
Hard copies of all signed, official, C-A Operating Procedures are kept on file in the C-A ESHQ Training Office, Bldg. 911A.

C-A OPERATIONS PROCEDURES MANUAL

8.35 C-A Waste Yard and Compactor/Baler Operating Procedures

Text Pages 2 through 9

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approved:_____ _____
Collider-Accelerator Department Chairman Date

J. Scott

8.35 C-A Waste Yard and Compactor/Baler Operating Procedures

1. Purpose

To provide instructions for waste packing operations at Building 965 (Fort Apache) waste yard and detailed operating procedures for compactor/baler operations, training and characterization of compacted waste.

2. Responsibilities

2.1 C-A Environmental Coordinator (EC), or designee, shall be responsible for segregating wastes for compacting, ensuring no prohibited Low Level Waste (LLW) items are added to waste stream, and characterizing waste prior to compacting.

2.2 Plant Engineering C-A Hemo Personnel shall be responsible for proper operation and routine maintenance of the compactor/baler unit.

2.3 C-A Department Radiation Control Technicians (RCT) are responsible to survey compactor and area around compactor for contamination as required, and assist in decontamination.

2.4 The EC, or designee, shall be responsible for control of ignition key and proper securing of unit, including tagout for any maintenance or surveying or cleaning of hopper area.

2.5 C-A EC, and/or rigging supervisor, are responsible for providing training and certification for Hemo personnel to operate unit and perform routine maintenance.

2.6 A list of certified Hemo operators shall be maintained by the C-A Rigging Supervisor with a copy in the Compactor/Baler Operating Log Book, which is maintained in EC Office.

3. Prerequisites

3.1 All personnel working in radioactive waste yard, and on compactor/baler operations, shall be RAD Worker 1 trained, have TLD badges, and be signed in on RWP 001.

3.2 Hemo Operators shall be trained and certified on compactor/baler operations and routine maintenance prior to operating unit unsupervised.

3.3 Wastes to be compacted shall be separated as to waste stream and staged by compactor/baler one waste stream at a time. Typical waste streams are compactable copper and copper wire, aluminum, and steel.

3.4 Wastes to be compacted shall be characterized for radioactive content prior to compacting using RAD waste programs.

3.5 A 25-foot area shall be roped off around compactor for personnel safety, and no personnel except Hemo Operator in cab can be in this area while compacting wastes.

3.6 Spill kit shall be verified to be complete and staged in an accessible area prior to starting compactor/baler.

3.7 Bins to be used for compacted waste identified and ready for bales.

3.8 Scale checked and operating to weigh compacted bales.

> **Note:**
> A sound survey shall be performed during compactor operation to determine hearing protection requirements are satisfactory.

3.9 Hearing protection (ear plugs) available for all personnel in area shall be used.

3.10 The C-A EC, or designee, shall be responsible for control of unit ignition key at all times.

4. Precautions

None

5. Procedure

5.1 A dedicated area for low-level radioactive waste packaging is located in the area vacated by the old Neutrino Facility Building (965). This area serves as a radioactive and mixed waste packaging area. The compactor/baler is located in this fenced, posted radiation area, and all compacting operations shall be performed here. There are several waste storage bins (B-25, B-12, B-52 bins) staged in this area for routine waste packaging. Full bins are surveyed, characterized, and paperwork is sent to Waste Management, who will pick up completed bins for final shipment. Three B-52 containers will be placed in area to accumulate compactable materials for compacting. The C-A Department EC, and assigned Waste Management Technician, shall be responsible to segregate compactable metals for these bins, and assure no prohibited items are placed in them. Also in this area are three walk-in conex containers. One container is used for packaging solid mixed wastes. One has compactor/baler spare parts and is

used for 55-gallon drum storage of wastes prior to waste management pickup. The third contains supplies and industrial scale-to-weigh wastes or waste packages. Also in yard are one to two roll-off containers for recyclable metals and construction debris. These roll-offs are in fenced, controlled area, to prevent extraneous materials from being added. Radiation Control Technicians shall survey these bins prior to shipping off site.

5.2 General Waste Yard Procedures

5.2.1 Each waste bin placed in yard by Waste Management has a unique ID number on bin.

5.2.2 When bin arrives at yard, record bin ID number on a green inventory form and place in log book.

5.2.3 Prior to adding waste to bin, label bin as to waste stream and mark green inventory form the same. Waste streams: paper, copper and wire, aluminum, steel, filters, plastic & micarta, etc.

Note:

1. All waste delivered to waste yard must be surveyed by an RCT and dose communicated to packer, or have a ram tag with radioactive information attached. Any contaminated item shall have ram tag filled out as to contamination levels and be double bagged.
2. No activated item, >100 mr/hr, shall be brought to waste yard routinely. Coordinate with EC and FS Representative.
3. Bins shall remain closed (covered) except when loading waste.

5.2.4 Log all items and their weight on green bin inventory form as you put them in bin.

5.2.5 When bin is full, EC or Waste Management Technician fills out radioactive waste control form and places a radioactive waste sticker on bin with appropriate information.

5.2.6 RCT surveys bin in a low background area filling out both RAD sticker on bin, front section on (RWCF), and Rad Waste Program Form.

5.2.7 The bin is weighed and weight is recorded on RWCF and Rad Waste Program Form.

5.2.8 EC performs Rad Waste Program to characterize waste. Copy of isotope concentrations from Rad Waste Program, RWCF with isotope concentrations filled in, green inventory forms, and Rad Waste Program Form are attached. A copy placed in Rad Waste Log Book in EC Office. Original sent to Waste Management.

5.2.9 Waste Management shall coordinate pickup of completed waste bin.

5.3 Mixed Waste Packaging

5.3.1 A green inventory form shall be started for each drum of mixed waste being loaded. Drum and form will be labeled with a unique integer.

> **Note:**
> Ensure any liquid filled electrical component (capacitor) is verified PCB-free, and EC checks with Waste Management it can go in drum, or be bagged separately.

5.3.2 Drums are loaded as mixed materials are produced. Mainly brass fittings, copper valves and flanges soldered areas, electrical components with lead, fluorescent, and regular light bulbs.

5.3.3 Fluorescent and regular light bulbs will be crushed into their own drum using the bulb crusher. Wear safety glasses and gloves and ensure conex door is open for ventilation.

5.3.4 When a drum is full, fill out radioactive waste control form and label drum with a mixed waste sticker.

5.3.5 Have RCT survey drum and fill out RWCF, mixed waste sticker, and Radwaste Program Form.

5.3.6 Weigh drum and record on RWCF and Radwaste Program Form.

5.3.7 EC shall use Radwaste Program Form to complete drum characterization and fill in isotope concentrations on RWCF.

5.3.8 Place a copy of completed RWCF, green inventory forms, Radwaste Program Form, and Isotope Concentration Form in Radwaste Records Log Book. Mail originals to Waste Management.

5.3.9 Waste Management shall coordinate pickup of full waste drums.

5.4 Compactor/Baler Sorting, Characterization and Operating Instructions

5.4.1 Three bins are set up in waste yard to accumulate compactable waste for compacting. The EC, or designee, shall be responsible to ensure only compactable, non-contaminated or non-prohibited wastes, are placed in these bins.

5.4.2 Green Inventory Forms for each bin shall be maintained in the Conex Log Book.

5.4.3 Characterizing Compactable Waste.

5.4.3.1 When bins are full, or full enough to commence compacting, characterize each bin for isotope concentration using Rad Waste Program.

5.4.3.2 Ensure bin is weighed. Have RCT survey bin and fill out Rad Waste Program Form.

5.4.3.3 EC shall take Rad Waste program Form and complete Radwaste Program to determine isotope concentrations.

5.4.3.4 The Rad Waste Program printout of isotope concentrations for bin shall be used to characterize compacted bales from that bin. A copy of this printout shall be added to whichever bin bales are placed in for shipment, and a second characterization of full bins completed adding the two. This will overestimate the actual isotopes concentrations, but prevent shielding any isotopes. A more accurate characterization may be used if necessary, as determined by the EC.

5.4.4 Operation of Compactor Baler

Note:
See Step 5.5.4 if at any time during operation you are required to work on unit, check inside hopper, or clean out behind ram.

5.4.4.1 Only qualified Hemo Operators shall operate the compactor/baler.

5.4.4.2 Ear protection shall be worn by all personnel in the area roped off during compactor operations.

5.4.4.3 EC, or designee, ensures area is roped off 25-feet around compactor, and that no personnel except Hemo Operator in cab enter this area while compacting.

5.4.4.4 Wastes for compacting shall be staged in reach of baler one waste stream at a time. This waste stream shall be compacted and bales packaged prior to staging next bin/waste stream.

5.4.4.5 Hemo Operator using C-A-OPM-ATT 8.35.a "Compactor/Baler Startup and Operating Checklist" or operations manual, shall perform routine pre-start checks of compactor.

5.4.4.6 After maintenance checks are complete, EC shall give key to Hemo Operator and clear safety area.

5.4.4.7 Hemo Operator, using C-A-OPM-ATT 8.35.a "Compactor/Baler Startup and Operating Checklist" and/or operations manual, shall start up compactor/baler and perform required dry run.

5.4.4.8 After dry run is completed satisfactorily, loading of hopper and baling, as per checklist, can begin. Four bales can be compacted before requiring bales to be packaged.

5.4.4.9 Baler can be used to move bales to fork truck for weighing and placing bales in final bins.

5.4.4.10 Ensure bales description of materials and weight are added to bins Green Inventory Form and a copy of isotope concentration printout is attached to inventory sheet.

5.4.4.11 After completion of compacting one waste stream, secure compactor/baler and reposition next waste bin/stream for compacting.

5.4.4.12 If required, follow step 5.5.4 in maintenance section to clear debris behind ram.

5.4.4.13 Repeat steps 5.4.4.5 – 5.4.4.12 until all waste bins/streams are compacted.

5.4.4.14 At end of each day secure the compactor. EC shall remove ignition key and maintain control of it until next day's operation. Replace covers on any open waste bins.

Note:
See Step 5.5.4 to set up compactor safely to allow survey inside hopper section.

5.4.4.15 At the end of compacting run, have RCT perform a full survey of compactor and area around it. Place a copy of completed survey in Compactor/Baler Log Book.

5.5 Maintenance of Compactor/Baler

5.5.1 Maintenance shall be scheduled with Plant Engineering Hemo Group as required by Operators Manual.

5.5.2 EC shall be responsible for writing work requests and getting compactor red tagged for major maintenance.

5.5.3 The EC shall act as a human red tag for minor maintenance. For example, changing hydraulic filters, surveying hopper, cleaning out behind ram, etc.

5.5.4 In order to survey inside of hopper or clean out behind ram, do the following:

5.5.4.1 EC or Hemo Operator can start compactor and open curved door and flat door.

5.5.4.2 Charge ram in slightly from fully discharged position to allow getting behind it.

5.5.4.3 Secure compactor and remove key. EC shall retain control of key.

5.5.4.4 Open lower panel breaker.

5.5.4.5 Close hydraulic oil isolation valves.

5.5.4.6 Disconnect positive terminal on battery.

5.5.4.7 EC shall remain by hydraulic isolation valves and battery terminal and have possession of ignition key, ensuring no way to energize equipment.

5.5.4.8 RCT can now survey hopper area, or Hemo Operator opens access ports and cleans out behind ram.

5.5.4.9 At completion of work: personnel report to EC and isolation valves are re-opened; battery terminal is refastened; control panel breaker is energized.

5.5.4.10 Retract ram fully, close curved door, close flat door, secure compactor.

6. Documentation

None

7. References

None

8. Attachments

8.1 C-A-OPM-ATT 8.35.a "Compactor/Baler Startup and Operations Checklist".